

ORDER

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OFFSHORE FLIGHT DATA PROCESSING SYSTEM (OFDPS)



February 21, 1990

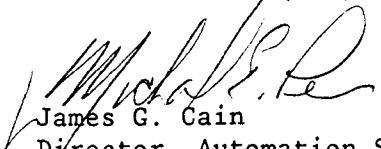
**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

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FOREWORD

This order establishes the Project Implementation Plan (PIP) for the Offshore Flight Data Processing System (OFDPS) as the primary directive governing activities required to implement OFDPS. It provides the direction to ensure that OFDPS progresses smoothly from the Site Acceptance Test phase into an operational system. It defines the role of the OFDPS Project Manager in directing system development, establishing milestones for field deployment, and establishing long term hardware and software support, and it describes the supporting roles of other applicable organizations, both within and outside of, the Federal Aviation Administration (FAA).


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Director, Automation Service

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CHAPTER 1. GENERAL

1. PURPOSE. This order is a reference document for activities required to implement, operate, and maintain the Offshore Flight Data Processing System (OFDPS). It defines the activities necessary for the project to evolve from the Site Acceptance Testing phase into a supported, operational system, and it assigns responsibilities to project participants in relation to those activities.

2. DISTRIBUTION. This order is distributed to the division level within Automation Service (AAP), System Engineering and Program Management (ASE), Logistics Service (ALG), Systems Maintenance Service (ASM), Air Traffic Operations Service (ATO), and Air Traffic Plans and Requirements Service (ATR) at Washington Headquarters; to the division level at the FAA Technical Center; to the division level at the Mike Monroney Aeronautical Center; to the Air Traffic and Airway Facilities Division level at Western-Pacific Regional Headquarters; and to Air Traffic and Airway Facilities offices at the Honolulu CERAP.

3-19. RESERVED.

CHAPTER 2. PROJECT OVERVIEW

20. SYNOPSIS. The Offshore Flight Data Processing System is a NAS Plan project to replace the existing Honolulu flight data processing system. The replacement system consists of IBM 4381 processors and peripherals with enhanced functional capabilities including comprehensive flight data processing, NAS data network interfaces, higher reliability, and increased capacity.

21. HISTORY. This project replaces the Compact Flight Data Processing System (CFDPS) currently in use at the Honolulu CERAP. The CFDPS employs obsolete hardware and software, and is maintenance labor-intensive and unreliable. The CFDPS hardware is almost beyond IBM's site maintenance capability, and typically faults several times per day. The system software is mostly undocumented and has been known to lose flight data for aircraft not under radar surveillance in the Honolulu CERAP airspace. An Offshore Flight Data Processing System (OFDPS) derived from existing Oceanic Display and Planning System (ODAPS) hardware and software architecture is the most cost-effective approach to Honolulu flight data processing modernization.

22-29. RESERVED.

CHAPTER 3. PROJECT DESCRIPTION

30. FUNCTIONAL DESCRIPTION.

a. OFDPS will perform flight data processing for flights operating in the Honolulu CERAP's area of responsibility and output flight strips to the appropriate sector positions. The OFDPS will exchange flight plan data with the resident NADIN IA concentrator and the Oakland ODAPS airspace abutting the Honolulu CERAP airspace, and will process flight plan data and related messages to produce outputs transmitted via Flight Data Input/Output (FDIO) Remote Control Units (RCU) to FDIO equipment located at Honolulu CERAP and specified remote towers.

b. OFDPS is intended to serve Honolulu until the Advanced Automation System (AAS) is implemented in the Honolulu CERAP.

c. Flight data can be provided from bulkstore and activated into the OFDPS from the FDIO equipment via the Remote Alphanumeric Keyboard (RANK). Other flight data sources via communications interfaces are NADIN IA and ODAPS. The central processor will combine the input flight plan data with stored data (including message field data, geographic data, aircraft characteristics, and other data unique to the CERAP's area of responsibility) as required to prepare flight progress strips.

d. Flight data processing begins with flight plan input. Error checking routines are performed on the flight plan, which is accepted if error-free. If errors are found, the source is notified by an appropriate error message. An accepted flight plan is processed according to the contents of the data fields. Direct route processing, route conversion, fix posting, calculation of arrival time, and strip addressing are performed by applying the stored data, logic, and rules to the flight plan contents. The resultant flight progress strips are addressed and transmitted to the Replacement Flight Strip Printers (RFSP) at each control position responsible for a phase of that flight. These strips can be amended, updated, or removed by controller-entered messages.

e. The OFDPS operational scenario includes:

- (1) Flight plan processing prior to activation.
- (2) Flight plan activation.
- (3) Progress reporting.
- (4) Flight Plan Revision.
- (5) Transition from OFDPS to other flight data processing facilities.

31. PHYSICAL DESCRIPTION.

a. The OFDPS consists of redundant systems; one in the active mode and the other in the standby mode. If a failure is detected in the active system, switchover to the standby system can occur with no degradation of system performance.

b. The system consists of units grouped by function:

(1) Central Processor. Redundant IBM 4381 computers and peripherals for input, output and storage.

(2) Communications Subsystems. All external communications are processed by redundant IBM 4956 Series/1 computers.

(3) Flight Data input and output. Operational data input/output is accomplished using FDIO equipment.

c. The IBM 4381 processes the flight data using modified Oceanic Display and Planning System (ODAPS) software.

d. The IBM Series/1 Communication Subsystem serves as the communication interface for all data entering and exiting the IBM 4381.

e. The FDIO equipment provides the means to enter and retrieve data. This equipment includes keyboards, cathode ray tube displays, flight strip printers, and remote data control units, and will be located within the Honolulu CERAP near the controller positions and at selected towers.

32. SYSTEM REQUIREMENTS.

a. General. The OFDPS Project requires enough hardware and software to operate redundant Honolulu flight data processing systems 24 hours a day using one on-line operational system and one backup system.

b. The hardware and software furnished by the Government is as follows:

- (1) ODAPS hardware (excluding the display subsystem)(Appendix 3)
- (2) FDIO hardware (Appendix 4)
- (3) ODAPS operating system software
- (4) ODAPS support software
- (5) ODAPS communication software
- (6) ODAPS flight data processing software
- (7) Site adaptation data.

c. Software Requirements. Using the ODAPS software and hardware architecture as a baseline, the contractor will develop and document all of the OFDPS software necessary to satisfy the design and performance requirements stated or referenced in the OFDPS Statement of Work.

d. System Baseline. The ODAPS software that serves as the OFDPS baseline will be the most current fully identifiable configuration available as of the OFDPS contract award date.

(1) ODAPS baseline code and functions will be used to the maximum extent practicable.

(2) An Adaptation function will exist to modify the software for site-specific requirements.

(3) All applicable requirements of the ODAPS specification FAA-E-2713 as modified by the OFDPS contract Statement of Work will be satisfied. Non-applicable requirements include display processing and conflict probe functions which apply uniquely to ODAPS.

e. Software Function Reference. The OFDPS will perform all flight data processing functions performed by the ODAPS. This includes operational and support software.

Functions in ODAPS and not required in OFDPS include:

- (1) Plan View Display (PVD) display processing;
- (2) Conflict probe; and
- (3) PVD-related message processing.

f. Personnel Requirements. Commercial hardware will be contractor maintained. No increase in maintenance personnel for commercial off-the-shelf (COTS) hardware is expected.

33. INTERFACES. To provide OFDPS with the necessary flight plans and other data, interfaces are required with external systems. Each OFDPS interface is described in its respective OFDPS Interface Control Document (ICD) as listed below.

- a. Oceanic Display and Planning System at the Oakland ARTCC
- b. NADIN IA (for Service A and B, AFTN, and ARINC)
- c. FDIO
- d. EARTS (future).

34-39. RESERVED.

CHAPTER 4. PROJECT SCHEMULE AND STATUS

40. PROJECT SCHEDULES AND GENERAL STATUS. Remaining project milestones and recently completed major milestones are listed in Appendix 2.

41-49. RESERVED.

CHAPTER 5. PROJECT MANAGEMENT

50. PROJECT MANAGEMENT. The overall technical management of the OFDPS program is the responsibility of the Air Traffic Control Automation Division, AAP-300 and, in particular, the En Route Automation Program Office, AAP-310. A member of this organization is designated OFDPS Project Manager and is the single focal point for all project activities.

- a. The Project Manager, OFDPS, coordinates Project activities, maintains the Project schedule, ensures the availability of funds, and serves as a central point of contact for all Project participants.
- b. A Contracting Officer (CO), designated by ALG-310, performs general contract management to ensure that the terms of the contract are met. The CO is the only person authorized to make changes that will affect prices, deliverables, or schedules.
- c. The Technical Officer position is filled by AAP-310 Project Manager (PM) and provides technical guidance and direction to the contractor. The PM ensures that the contractor has access to technical documentation, appropriate data bases, and sources of information relative to Government Furnished Equipment (GFE).
- d. Regional Project Manager - Airway Facilities. The Western-Pacific Region (AWP) appoints an OFDPS Regional Project Manager from the Airway Facilities Division. The Airway Facility Regional Project Manager monitors facilities preparation and equipment installation, and coordinates requests for contractual or technical support from the sites with AAP-310 and the National Automation Engineering Field Support Sector, ASM-160. The Regional Project Manager arranges for appointment of a technical representative at the Honolulu CERAP.
- e. Regional Project Manager - Air Traffic. The Western-Pacific Region (AWP) appoints an OFDPS Regional Project Manager from the Air Traffic Division. The Air Traffic Regional Project Manager ensures that Air Traffic at the Honolulu CERAP is prepared to enter into an Initial Operational Capability status and further prepares for Operational Readiness Demonstration.
- f. Center Technical Representative. A Center Technical Representative (TR), appointed by the Western Pacific Region, has overall responsibility for the management of the OFDPS Project within the Honolulu CERAP. The duties of the TR may be divided between the Air Traffic (AT) and Airways Facilities (AF) services. The TR must ensure that all OFDPS hardware has been properly installed, that all installation, integration, and acceptance testing has been completed, and that Initial Operational Capability (IOC) has been reached. The TR must also ensure that controllers and systems operators are trained, and that operational procedures have been established prior to the Operational Readiness Demonstration (ORD).

g. FAA Technical Center Project Management. ACN-100 will review and comment on test plans and procedures, and participate in testing. An OFDPS Test Representative will be appointed from ACN-100 to serve as the lead for test support. The Test Representative will coordinate ACN-110 activities with the OFDPS Project Manager, AAP-310.

h. Systems Engineering and Integration Contractor (SEIC) Project Management. The SEIC provides the AAP-310 Project Manager with project management assistance in the following tasks:

- (1) Project Planning.
- (2) Subsystem and interface configuration control and auditing.
- (3) Testing support.
- (4) Documentation control.
- (5) Logistics support analysis.
- (6) Project reviews and reports.

i. The contractor, ST Systems Corporation (STX), will perform duties in accordance with the OFDPS contract, number DTFA01-88-C-00029.

j. The user of this document is responsible for bringing to the attention of the OFDPS Project Manager any significant discrepancy found within this document.

51. PROJECT CONTACTS. The individuals who are directly involved with, and responsible for the successful completion of the OFDPS project are listed in Appendix 1 to this document.

52. PROJECT MANAGERIAL COMMUNICATIONS. The AAP-310 Project Office, Regions, ARTCC's, Honolulu ACF on-site Project Manager, SEIC, and FAA Technical Center may make use of the SEIC "PROFS" system for Project information distribution.

53. GENERAL PROJECT RESPONSIBILITIES.

a. AAP-310 has technical responsibility for the OFDPS project until turnover to ATR and ASM following completion of the Oceanic Display and Planning System (ODAPS) Operational Readiness Demonstration (ORD) at the New York ARTCC.

b. AAP-310 has established yearly options under the OFDPS development contract for technical services support, hardware maintenance, software licensing, and refresher training through FY 1993. Technical Services Support as provided by FAA contract DTFA01-88-C-00029 makes available a wide range of software maintenance capabilities.

c. ST Systems Corporation (STX), under AAP-310 technical direction, is responsible for hardware and software maintenance in accordance with contract DTFA01-88-C-00029. Prior to turnover to ATR and ASM, AAP-310 will have arranged for a person designated by ASM-230 to serve as the Contracting Officer's Technical Representative for the hardware maintenance option of the OFDPS contract. Similarly, ATR-250 will have appointed an Alternate Technical Officer (ATO) to participate in managing the operational software maintenance and licensing options of the OFDPS contract. ASM-160 will have appointed an ATO to assist in monitoring the hardware, OFDPS Communication System (OCS) software, and diagnostic software maintenance options of the contract.

d. AAP-310 will define the OFDPS product baseline after the completion of the Site Acceptance Test at Honolulu CERAP.

e. Software maintenance will be conducted under the direction of ATR-250 at the FAA Technical Center. The Oceanic Display and Planning System System Support Facility (SSF) located at the FAA Technical Center will serve as the OFDPS SSF beginning at the time of ODAPS ORD at the New York ARTCC.

f. AAP-310 will arrange for funding for OFDPS support through FY 1992. For FY 1993 and beyond, ASM-230 will provide funding for OFDPS hardware maintenance and diagnostic maintenance support; ATR-200 will provide funding for operational software support at the site and at the FAA Technical Center, and software license fees.

54-59. RESERVED.

CHAPTER 6. PROJECT FUNDING

60. PROJECT FUNDING STATUS. GENERAL. Approximately \$3.6M for system hardware procurement and system integration have been allocated to FAA Headquarters for the OFDPS project. From these funds a fixed price incentive fee contract, DTFA01-88-C-00029, was awarded to ST Systems Corporation, (STX).

61-69. RESERVED.

CHAPTER 7. DEPLOYMENT

70. DEPLOYMENT OVERVIEW. The contractor has installed the OFDPS equipment, excluding FDIO hardware, at the Honolulu CERAP. The FAA has installed all FDIO equipment at the Center and remote towers.

71. FAA RESOURCES. The FAA provides floor space, power, lighting, and cooling resources sufficient to satisfy system installation requirements.

72-79. RESERVED.

CHAPTER 8. VERIFICATION

80. TEST OVERVIEW. The fundamental test requirement is repeatability of ODAPS Factory Acceptance Test procedures and results. The contractor identified changes to ODAPS test procedures required for OFDPS, and made the necessary changes to the test documents. The general test philosophy and methodology used in ODAPS have been applied to OFDPS.

81. FACTORY ACCEPTANCE TESTING. Factory Acceptance Testing (FAT) was conducted by the contractor to verify that the operational requirements of the OFDPS Statement of Work and applicable sections of the ODAPS specification have been met.

82. SITE ACCEPTANCE TESTING. OFDPS Site Acceptance Testing focused on satisfying the requirement to provide accurate and acceptable flight strips to the Center and the remote towers. Additionally, site testing verified overall acceptability of the program.

83. DEVELOPMENT OF SITE ADAPTATION. Site-specific adaptation data has been provided by FAA site personnel and will be incorporated into the system by the contractor.

84. INTEGRATION AND SHAKEDOWN TESTING. Following the Contractor's Site Acceptance Test, ACN-110 and ASM-160 conducted a combined integration and shakedown test at Honolulu CERAP.

85. INITIAL OPERATIONAL CAPABILITY (IOC). Western Pacific Region has appointed Air Traffic and Airway Facilities OFDPS project officers. Duties are explained below.

a. Regional Airway Facilities Division shall:

- (1) Provide program management for all regional site preparation work necessary to support installation and IOC.
- (2) Act as interface for all matters encountered at the facility needing Washington office resolution.
- (3) Provide engineering support as needed.
- (4) Provide on-site resident engineers at the Honolulu CERAP to support installation of OFDPS related hardware at the CERAP and support installation of Flight Data Input/Output equipment at the remote towers.

b. Regional Air Traffic Division shall:

- (1) Provide, as conditions allow, regional staff coordination to adjust to training, testing, and operational needs of the system.
- (2) Provide input to the Washington Program Office and respond to planning activities that apply to the Region.

(3) Participate in program reviews, Factory Acceptance Testing, Site Acceptance Testing, and preparation for IOC.

(4) Ensure that appropriate FAA/military local on-site letters of agreement are reviewed and signed by the necessary participants.

(5) In coordination with the Regional Airway Facilities and CERAP staff, participate in the operational cutover (ORD) and full implementation of OFDPS.

86. OPERATIONAL READINESS DEMONSTRATION (ORD). The ORD is a formal demonstration that OFDPS personnel, procedures, hardware, software, and support services are ready to support real-time air traffic control. The measurement criteria for this demonstration are established by Air Traffic Services, Airways Facilities, and Development and Logistics. The ORD examines the following operational, maintenance, and engineering areas:

a. Final refinement of operating procedures, methods, adaptation, and parameters.

b. Demonstration of adequacy of all aspects that involve actual control of air traffic prior to commissioning.

c. Verification that system, subsystem, and equipment documentation is accurate at the time the facility becomes operational.

d. Verification that sufficient staffing exists and that personnel are sufficiently trained and familiar with system functions and equipment.

e. Verification that the required facility logistic support capability has been established and that technical logistics data is available.

87-89. RESERVED.

CHAPTER 9. INTEGRATED LOGISTICS SUPPORT

90. MAINTENANCE CONCEPT.

- a. IBM Equipment. IBM equipment will be maintained under a maintenance support contract.
- b. Government Furnished Equipment (GFE) FDIO Equipment. GFE FDIO equipment will be maintained by the FAA under its existing support system.
- c. Commercial-Off-The-Shelf (COTS) equipment and software. COTS equipment, including software, will be maintained under a separate maintenance and support contract.

91. HARDWARE MAINTENANCE.

- a. Headquarters (AAP-310) will fund the first two option years of maintenance. Options for two follow-on years for a total of four option years will be available.

- b. Hardware Problem Reporting Procedure:

- (1) STX will be responsible for documenting and resolving hardware malfunctions until completion of Site Acceptance Testing (SAT). Malfunctions will be reported to AAP-310 using FAA Hardware Discrepancy Report (HDR) forms.

- (2) After SAT and before ODAPS ORD at the New York ARTCC, facility AF staff will report hardware discrepancies to AAP-310 using HDR's. Subsequent to ODAPS ORD at the New York ARTCC, HDR's will be forwarded to ASM-160 for resolution.

- c. Hardware Support:

- (1) Site Hardware Maintenance. When a failure of the OFDPS system or subsystem is detected, Honolulu AF staff will either attempt a restart or switch over to the backup OFDPS system. Once a failed system is off-line, AF will isolate the problem to the subsystem level. Failure of an IBM subsystem will be resolved by requesting IBM on-site maintenance as provided by the hardware maintenance option of FAA contract DTFA01-88-C-00029. Repairs of all other OFDPS hardware will consist of component replacement or subsystem replacement where appropriate. Once the maintenance is completed, the airways facilities staff will run diagnostics to verify successful repair.

- (2) Site Spares. Spares for IBM equipment will be furnished by IBM. Spares for non-IBM equipment will be stored at the Honolulu CERAP and the associated remote OFDPS tower facilities. Depleted site spares for non-IBM equipment will be obtained from the FAA depot. IBM will provide on-site maintenance support for all IBM equipment. AAP-310 has arranged for the Depot to receive a 10-year supply of spares to support OFDPS.

(3) ASM Support. Normally, system failure resolution shall be accomplished by CERAP personnel or by IBM maintenance support. When IBM maintenance support is not responsible for the failed equipment and the site is unable to correct the failure, the failure shall be referred to ASM-160 for resolution. ASM-160 shall be responsible for engineering hardware improvements and providing on-site problem resolution assistance. IBM will provide for full hardware maintenance to include recommending changes or modifications to existing IBM hardware. All proposed or recommended changes to IBM equipment, including routine IBM engineering changes must be submitted to ASM-160 for prescreening and subsequent NCP processing by the ME CCB. Approved changes will result in issuance of an EEM Chapter which will authorize IBM to install the modification.

(4) FAA Depot Support. AAC-400 shall be responsible for storage, custody, and issue of the non-IBM/non-FDIO OFDPS life cycle spares in accordance with the OFDPS Integrated Logistics Support Plan. If non-IBM items stored at the FAA Depot are depleted prior to the end of the system life-cycle, AAP-310 will have the responsibility to procure or repair replenishment stock until the OFDPS equipment is retired. For those items stored by the Depot, AAC-400 will accumulate inoperable units returned from the site for future repair in the event that life-cycle estimates were inadequate. AAC-400 shall supply OFDPS consumables.

(5) Training. AAP-310 will provide all training through FY 1993 (initial, attrition, and refresher) under the original OFDPS contract. For FY 1994 and beyond, AAP-310 will help the FAA Academy establish a follow-on contract for hardware maintenance refresher training.

92. SOFTWARE MAINTENANCE.

a. Software Problem Reporting Procedures:

(1) STX will be responsible for documenting software malfunctions until successful completion of Site Acceptance Testing (SAT) at Honolulu. Malfunctions will be documented with FAA Program Trouble Report (PTR) forms.

(2) Facility Air Traffic (AT) and Airway Facility (AF) staffs will assume the reporting responsibility for software discrepancies following SAT. Until ODAPS ORD at the New York ARTCC, PTR's will be forwarded to AAP-310 for assignment to the contractor for resolution under the Technical Services Support option of the OFDPS contract. Subsequent to ODAPS ORD at the New York ARTCC, operational and support software PTR's will be forwarded to ATR-250 for validation and assignment to the Technical Services Support contractor for resolution at the site or at the FAA Technical Center. OFDPS Communication System software and diagnostics software PTR's will be forwarded to ASM-160 for similar action.

(3) PTR validation and priority for resolution will be determined by ATR-250 for those PTR's involving operational software. ASM-160 will validate and prioritize all other PTR's.

b. Software Support:

(1) Site Maintenance: Facility AT staff will maintain the operational software with support from the contractor through FY 1993 under the Technical Services Support option of the OFDPS contract. For FY 1994 and beyond, AAP-310 will establish a follow-on maintenance contract for technical services. Air Traffic facility staff personnel shall provide software maintenance including adaptation changes, map updates, and testing of any new software release or patches. Site staff shall document software problems via the PTR form.

(2) FAA Technical Center software support: ATR-250 shall provide software support at the FAA Technical Center using the SSF and the services of the Technical Services Support contractor. ATR-250 shall monitor and direct the activities of the contractor. ASM-160 shall provide support of OFDPS Communication System and diagnostic software.

(3) Operational and Support Software Baseline Control: ATO-300 shall review operational changes proposed for OFDPS software releases. These packages will be approved by the AT CCB.

c. Technical Services Support Services Contract. The contract option for software support will be set up by AAP-300. The support contractor may perform his work using the remote terminal access (RTA) entry capabilities of the off-line OFDPS system or the ODAPS System Support Facility (SSF) at the FAATC. The following specific services and tasks will be performed by this contractor:

(1) The contractor will perform PTR resolution, OFDPS system builds and on-site support as required.

(2) The contractor will perform OFDPS enhancements development. These enhancements will be funded with RE&D and F&E appropriations.

d. OS/MVS Licensing. The contractor will specify commercial OFDPS software licensing fees for OS/MVS beginning January 1. The fees for OS/MVS will be identified for 4 years by individual calendar years. This will be a yearly option for up to four years executable in one year increments.

e. VM Licensing. The contractor will specify commercial OFDPS software licensing fees for VM beginning January 1. The fees for VM will be broken out for a 4-year period by individual calendar years. This will be a yearly option for up to four years executable in one year increments.

93. TRAINING. The contractor will provide training for FAA System Engineers, Computer Operators, Software Maintenance Specialists/Automation Specialists, and Air Traffic Controllers/Assistants. Training for the OFDPS will be developed in accordance with the requirements specified in FAA Standard 028, Contract Training Programs.

a. System Engineer Training. The contractor will provide an On-the-Job-Training (OJT) training program for FAA Systems Engineers in accordance with applicable portions of FAA Standard 028. This training will be provided prior to IOC.

(1) Training Objectives. The contractor's training program will prepare the FAA Systems Engineer to:

(a) Input all system commands necessary to reconfigure, operate, and restore system service.

(b) Interpret all error and status messages as to system condition.

(c) Distinguish between hardware and software malfunctions.

(d) Understand the interfaces between OFDPS and other systems.

(e) Perform program operation and system error analysis, taking the appropriate action.

b. Computer Operator Training. The contractor will provide an OJT program for Computer Operators. The training will not be available prior to IOC. Until formal training is conducted for Computer Operators, the Contractor will provide computer operators under an engineering services task.

(1) Training Objectives. The contractor's training program will prepare the FAA Computer Operator to:

(a) Perform system startup, startover, recovery, and change operational modes.

(b) Have a functional overview of the OFDPS system.

(c) Perform event reconstruction after interruptions.

(d) Mount, dismount, and archive magnetic tapes and disks.

(e) Have a knowledge and functional use of all system commands, configurations, and other input messages.

(f) Interpret all output messages and take appropriate action.

c. Air Traffic Controller/Assistant Training. The contractor will provide a lecture/laboratory (traditional) training program for the operational applications of the new software and familiarization with the OFDPS. The training program will use approved FAA Academy lesson plans and

procedures. Controller training will not be available prior to IOC. The site will adequately train its Controllers prior to Operational Readiness Demonstration (ORD). Formal training will be provided by the Contractor.

(1) Training Objectives. The contractor's training program will prepare the FAA Air Traffic Controller/Assistant to:

(a) Enter and properly interpret all NAS FDP controller, assistant, and supervisory messages for use in separating, sequencing, and controlling aircraft according to established FAA rules and NAS FDP procedures.

(b) Identify and correct errors in message format and take appropriate action in response to output messages using OFDPS equipment and supervisory resources.

d. Automation Specialist (AUS) Training. The Contractor will provide training for FAA Software maintenance Specialists/Automation Specialists. Training for the OFDPS shall be provided in accordance with the requirements specified in FAA Standard 28, Contract Training Programs. The Contractor will provide on-site support to fulfill the Automation Specialist function until the Honolulu automation staff is trained as noted below.

(1) Training Objectives. The Contractor's training program will prepare the Software Maintenance Specialists/Automation Specialists to:

- (a) Provide updates to the monitor software.
- (b) Provide updates to the OFDPS Flight Data Processing (FDP) software.
- (c) Provide updates to the OFDPS Communication Software.
- (d) Provide updates to the OFDPS Support Software.
- (e) Perform OFDPS system builds.
- (f) Build OFDPS simulation (SIM) tapes.
- (g) Test OFDPS software modifications.
- (h) Isolate OFDPS faults and generate coding corrections.

(2) Documentation. Documentation and manuals not covered in paragraph 95 will be provided during Software Maintenance Specialist/Automation Specialist training.

(3) Student Prerequisites. Students must have Basic Assembly Language (BAL) and JOVIAL training, to be provided on-site by Computer Sciences Corporation (CSC).

e. Refresher Training. The OFDPS contract provides an option for site refresher training through FY 1993. For FY 1994 and beyond, AAP-310 will help the FAA Academy establish a follow-on contract for System Engineer, Computer Operator, Air Traffic Controller, and Automation Specialist training as required.

94. SUPPORT TOOLS AND TEST EQUIPMENT.

a. OFDPS requires no hardware test tools and equipment not already available at the site.

b. OFDPS software support programs are part of the deliverable software system.

95. VENDOR DATA AND TECHNICAL MANUALS. The contractor is providing the following support documentation.

a. Operator's Manual. The Operator's Manual will provide the information necessary to enable an operator to perform system start-up, start over, switch over, run and shutdown operations.

b. Support Software User's Manual. The User's Manual will provide the information needed to enable the user to control the operational and operational support programs.

c. System Maintenance Handbook. The System Maintenance Handbook will provide the information necessary for maintenance of the contractor supplied portion of OFDPS. The manual will be consistent with the requirements of FAA Order 6000.27, Maintenance Philosophy Steering Group Report, and 6000.15A, General Maintenance Handbook for Airway Facilities.

96-99. RESERVED.

CHAPTER 10. ADDITIONAL PROJECT IMPLEMENTATION ASPECTS

100. TRANSITION.

a. A transition plan is necessary to document procedures for phasing out the current CFDPS operations and initiating full-time OFDPS operations. The Honolulu CERAP is preparing a transition plan to describe a systematic method to accomplish this conversion. The transition plan will address the following:

- (1) Procedural changes, if necessary, to the present system while the new system is being tested.
- (2) Personnel staffing requirements for transition.
- (3) Adequacy of facilities for transition activities.
- (4) Disposal of existing CFDPS hardware in accordance with FAA Order 4800.2A, Utilization and Disposal of Excess and Surplus Personal Property.
- (5) Communication system modifications required by dual operations.
- (6) Schedule of transition activities.
- (7) Responsibilities of participating organizations.

101. CONFIGURATION MANAGEMENT.

a. Software. The AAP-300 cluster Configuration Control Board (CCB) will approve baseline OFDPS changes prior to ODAPS ORD at the New York ARTCC. Subsequent to ODAPS ORD at the New York ARTCC, the Air Traffic (AT) CCB will control all baseline changes to the operational software.

b. Hardware. AAP-310 will maintain configuration management responsibility for OFDPS hardware until turnover to ASM after completion of ODAPS ORD at the New York ARTCC.

c. Documentation. ASE-200 will maintain NAS-MD-001 relevant to OFDPS baselined documentation. Configuration controlled documentation for flight data processing software will be configuration managed by ATR. Hardware and OFDPS Communication System and diagnostics software documentation will be configuration managed by ASM-160. Documentation control procedures in use by ASM-160/ATR-250 should be used as a guide. The Technical Services Support contractor will be tasked to develop the approved documentation updates associated with approved changes.

- (1) Requesting Documentation Changes. Requests for changes and enhancements to OFDPS will be submitted via the NCP process in accordance with Order 1800.8.

102. ACRONYMS

AFTN	Aeronautical Fixed Telecommunications Network
ARINC	Aeronautical Radio, Inc.
ARTCC	Air Route Traffic Control Center
CA	Configuration Audit
CCC	Central Computer Complex
CDR	Critical Design Review
CDRL	Contract Deliverable Requirements List
CERAP	Combined Center Radar Approach Control Facility
CFAF	Central Flow Automation Facility
CM	Configuration Management
CODS	Composite Oceanic Data Set
COTS	Commercial Off-the-Shelf
CPC	Computer Program Component
CPCI	Computer Program Configuration Item
CTDS	Compool Table Design Specification
DID	Data Item Description
EARTS	En Route Automated Radar Tracking System
F&E	Facilities & Equipment
FAA	Federal Aviation Administration
FAATC	Federal Aviation Administration Technical Center
FAT	Factory Acceptance Test(ing)
FDIO	Flight Data Input Output
FDP	Flight Data Processing
FIR	Flight Information Region
GFE	Government Furnished Equipment
HDR	Hardware Discrepancy Report
ICD	Interface Control Document
ILSP	Integrated Logistics Support Plan
IOC	Initial Operating Capability
MAC	Months After Contract
MAT	Monitor Acceptance Test
MOU	Memorandum of Understanding
NADIN	National Airspace Data Interchange Network
NCP	NAS Change Proposal
NORAD	North American Air Defense Command
ODAPS	Oceanic Display and Planning System
OFDPS	Offshore Flight Data Processing System
OJT	On-the-Job Training
ORD	Operational Readiness Demonstration
OS/MVS	Operating System/Multiple Virtual Storage
PCA	Physical Configuration Audit
PCU	Protocol Converter Unit
PIP	Project Implementation Plan
PTR	Program Trouble Report
PVD	Plan View Display
QRO	Quality/Reliability Officer
RCU	Remote Control Unit
RE&D	Research, Engineering & Development
RFP	Request for Proposal
SAT	Site Acceptance Test(ing)

SDD	Subsystem Design Data
SDL	Software Development Laboratory
SDP	Software Development Plan
SEIC	Systems Engineering and Integration Contractor
SOW	Statement of Work
TIM	Technical Interchange Meeting
TRR	Test Readiness Review
UAT	User Acceptance Test
UDF	Unit Development Folder
VRTM	Verification Requirements Traceability Matrix
VS/VM	Virtual Storage/Virtual Machine
ZHN	Honolulu CERAP identifier
ZNY	New York ARTCC identifier
ZOA	Oakland ARTCC identifier

103-109. RESERVED.

APPENDIX 1.OFDPS REPRESENTATIVES

OFDPS PROJECT MANAGER, AAP-310
Jack A. Neuberger (202) 267-8338
800 Independence Avenue, S.W.
Washington, D.C. 20591

AIR TRAFFIC PLANS AND REQUIREMENTS SERVICE
Elbert Henry, (ATR-120) (202) 267-9175
800 Independence Avenue, S.W.
Washington, D.C. 20591

Floyd Woodward, (ATR-210) (202) 267-9436
800 Independence Avenue, S.W.
Washington, D.C. 20591

FAA TECHNICAL CENTER (ACN)
Delois Smith, (ACN-110) (609) 484-6928
FAA Technical Center
Atlantic City Airport
Pomona, NJ 08405

Jerry Christensen, (ASM-160) (609) 484-6611
FAA Technical Center
Atlantic City Airport
Pomona, NJ 08405

WESTERN-PACIFIC REGION
Del Rupp, (AWP-466) (213) 297-1336
FAA Western Pacific Region
P.O. Box 92007 Worldway Postal Center
Los Angeles, CA 90009

Frank Torikai, (AWP-510) (213) 297-1400
FAA Western Pacific Region
P.O. Box 92007 Worldway Postal Center
Los Angeles, CA 90009

Honolulu CERAP
John Gordon, (ZHN-AF) (808) 732-8201
HNL CERAP
4204 Diamond Head Road
Honolulu, HI 96816
(PROFS ID WFCM698)

Bill Kauaihilo, (ZHN-512b) (808)-734-6654
4204 Diamond Head Road
Honolulu, HI 96816

OFDPS CONTRACT OFFICER

Sonja Whitson, (ALG-311)
800 Independence Avenue, S.W.
Washington, D.C. 20591

PERSONNEL AND TECHNICAL TRAINING

Don Espinosa, (AHT-400)
800 Independence Avenue, S.W.
Washington, D.C. 20591

(202) 366-6992

OFDPS PROJECT SEIC

Nils van den Beemt, Martin Marietta
475 School St., S.W.
Washington, DC 20024

(202) 646-5783

Pete S. Chandler, Martin Marietta
FAA Technical Center
Atlantic City Airport
Pomona, NJ 08405

(609) 484-4509

APPENDIX 2.OFDPS
IMPLEMENTATION MILESTONES

<u>Activity</u>	<u>Start</u>	<u>Complete</u>
Test Readiness Review for FAT	4/28/89	4/28/89*
Factory Acceptance Test	5/1/89	5/12/89*
SDL Hands-On Exercises for FAA	5/15/89	5/19/89*
Pack and ship hardware	5/23/89	5/26/89*
Install hardware	5/31/89	6/19/89*
Test Readiness Review for SAT	7/10/89	7/10/89*
Site Acceptance Test	7/11/89	7/24/89*
Support software demonstration	7/25/89	8/4/89*
Site Integration and Shakedown Test	8/7/89	8/21/89*
Deployment Readiness Review	10/27/89	10/27/89
IOC	10/31/89	10/31/89
ORD	2/15/89	2/15/89

* Complete as of the date on this document.

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Appendix 3

APPENDIX 3.

OEDEPS

GOVERNMENT-FURNISHED IBM HARDWARE

3161-110 Display station	
3161-110 Display station	3803-002 Tape control
3161-110 Display station	3803-002 Tape control
3178-C20 Display station	
3178-C20 Display station	3880-003 Storage control
3178-C20 Display station	3880-003 Storage control
3178-C20 Display station	
3178-C20 Display station	4245-012 Printer
3178-C20 Display station	4245-012 Printer
3178-C20 Display station	
3180-110 Display station	4381-P01 Processor
3180-110 Display station	4381-P01 Processor
3180-110 Display station	
3180-110 Display station	4956-E70 Processor
3180-110 Display station	4956-E70 Processor
3203-005 Printer	
3203-005 Printer	4959-A00 I/O Expansion unit
	4959-A00 I/O Expansion unit
3268-002 Printer	4959-A00 I/O Expansion unit
3268-002 Printer	4959-A00 I/O Expansion unit
3268-002 Printer	
3268-002 Printer	4973-001 Line printer
	4973-001 Line printer
3268-C02 Printer	
3268-C02 Printer	4974-001 Printer
	4974-001 Printer
3274-D31 Control unit	4979-001 Display station
3274-C31 Control unit	4979-001 Display station
3274-C31 Control unit	
3274-C31 Control unit	4993-001 Terminal enclosure
3274-D41 Control unit	4993-001 Terminal enclosure
	4993-001 Terminal enclosure
3278-A02 Display Console	4993-001 Terminal enclosure
3278-A02 Display Console	
3380-BD4 DASD	4997-02B Rack enclosure
3380-AE4 DASD	4997-02A Rack enclosure
3380-AA4 DASD	
3420-005 Mag tape unit	
3420-005 Mag tape unit	
3420-006 Mag tape unit	
3420-006 Mag tape unit	
3480-A22 Control unit	
3480-A22 Control unit	
3480-B22 Mag tape unit	
3480-B22 Mag tape unit	
3705-E03 Comm controller	
3705-E03 Comm controller	

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Appendix 4

APPENDIX 4.

OFDPS

FLIGHT DATA INPUT/OUTPUT (FDIO) EQUIPMENT
LOCATION AND QUANTITIES

OFDPS
FLIGHT DATA INPUT/OUTPUT (FDIO) EQUIPMENT
LOCATION AND QUANTITIES

<u>SITE</u>	<u>IDENT</u>	<u>RCU</u>	<u>RANK</u>	<u>RESP</u>	<u>CRT</u>
Honolulu CERAP	ZHN	5	18	18	18
Kahului	OGG	1	2	2	2
Luhue	LIH	1	2	2	2
Hilo	ITO	1	2	2	2
Kona Kae Alale	KOA	1	2	2	2
Honolulu Tower	HNL	1	2	4	2
<u>Spares</u>		<u>0</u>	<u>0</u>	<u>2</u>	<u>2</u>
Total		10	28	32	30

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APPENDIX 5.

OFDPS

DATA ITEM DESCRIPTION LIST

DATA ITEM DESCRIPTION (DID) LIST
FOR OFFSHORE FLIGHT DATA PROCESSING SYSTEM

Preparation Instruction:

The contractor will prepare all documentation for the OFDPS using GFE baseline documentation. The documentation baseline is ODAPS MAT level documentation or ODAPS FAT level documentation. The contractor shall select the appropriate document from these two sets and present this choice for approval to the FAA. The contractor shall prepare change pages to these documents in the same style, content, and level of detail as the prevailing document.

The following documents shall be provided:

		Number of Copies	
		Draft	Final
1)	Computer Program Functional Specification	7 (2 MAC)	15 (5 MAC)
2)	Computer Program Design Specification	7 (3 MAC)	15 (7 MAC)
3)	Installation Plan	8 (4 MAC)	8 (6 MAC)
4)	Operator's Manual	7 (6 MAC)	15 (10 MAC)
5)	Users Manual (Support Software only)	7 (6 MAC)	15 (10 MAC)
6)	Subsystem Design Data	7 (6 MAC)	15 (12 MAC)
7)	Interface Control Document	7 (6 MAC)	15 (12 MAC)
8)	Site Acceptance Test Plan	8 (8 MAC)	8 (9 MAC)
9)	Site Acceptance Test Procedure	8 (9 MAC)	8 (12 MAC)
10)	Site Acceptance Test Reports	-----	8 (16 MAC)
11)	OFDP Software System	-----	1 (12 MAC)

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Draft and Final documents will be delivered to the following addresses for review and final distribution.

Jack A. Neuberger, AAP-310, Room #708
600 Independence Avenue, S.W.,
Washington, DC 20591

DOT/FAA, Honolulu CERAP
Diamond Head Road
Honolulu, Hawaii, 96816
Tel: 808-732-8204/732-8218

Receiving Officer, FAA Technical Center,
FAATC, Atlantic City International Airport
New Jersey, 08405
Attn: ACT-41A.4 (Clarence Abbott)
NAS Documentation Facility
Tel: 609-484-5125/484-4098

DOT/FAA/AWP-500
15000 Aviation Blvd.,
Hawthorne, California 90250
Tel: FTS-984-1725

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Appendix 6

APPENDIX 6.
OTHER OFDPS EQUIPMENT

Appendix 6.
Other OFDPS Equipment

Items	Qty	Spare	Total Items
T-Bar TRN SW 8CH [5110]	2	1	3
T-Bar SW CNTL PNL [5102]	1	1	2
T-Bar Second Switch [5102-M266-3]	1	0	1
Power Supply [5997]	1	0	1
Power Cord [5003-2]	1	0	1
T-Bar SE to SW Cable [5000-250]	2	1	3
T-Bar PWR Supply [5997]	4	1	5
T-Bar PWR SPL Cords [5002-4]	2	1	3
T-Bar PS/DSPL Mod [5990A-1]	2	1	3
T-Bar Patch Cords [5988-1-4]	10	1	11
T-Bar Module W/Ind [5985-1]	20	4	24
T-Bar Mod MNT FRM [5987-12R]	2	1	3
T-Bar Cabinet [6012-1]	1	0	1
Reel Tape Storage Rack [INMAC (8/88) pg. 90]	1	0	1
Protocol Conversion Units	8	1	9
Omega Synchronized Clock/Antenna [Model OMDG]	2	1	3
NADIN Modems	4	1	5
Misc. Cable, Connectors, Tools	1 lot		1 lot
Remote Alarm Panel	2	1	3
Local Alarm Panel	2	1	3
IBM Remote Terminal Controller [3274-C31] (Refurbished units)	2	0	2
IBM Front-End Controller [3705-E03] (Refurbished units)	2	0	2
IBM Display Stations [3180-110] (New units)	2	0	2
IBM 4245-012 (New units)	2	0	2
IBM 3274-D41 (New units)	1	0	1
IBM 3268-C02 (New units)	2	0	2
Hardware for T-Bar to 4-Wire NEC Data Modem (2400) [2400MR]	2	0	2
Coax A/B/C Switches	8	0	8
Cabinet for PCUs [Enclosure Corp.]	1	0	1
Cabinet Door Color Change	1	0	1

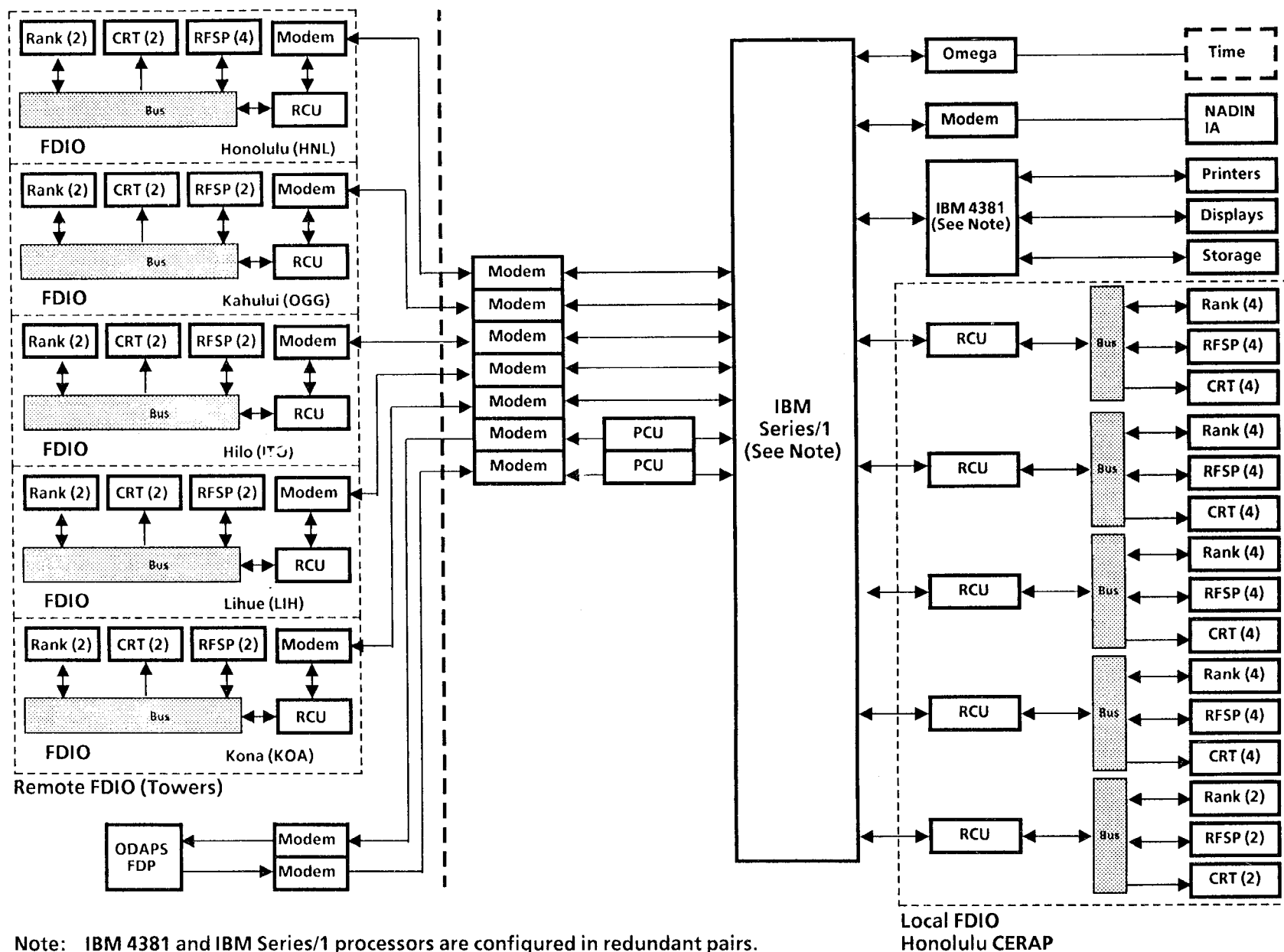
<u>Items</u>	<u>Qty</u>	<u>Spare</u>	<u>Total Items</u>
Additional Adapter Cards (New units)			
a. Int Digital I/O [1560]	2	0	2
b. Channel Repower [1565]	2	0	2
c. SDLC Single Ln Cntl [2090]	30	0	30
d. EIA Cables (for RCU) [2062]	20	0	20
e. MFA Card [1310]	1	0	1
f. MFA Cable [5770]	1	0	1
Additional Adapt Cards for OTH-B	2	0	2
"IRMA" Boards (New units)	2	0	2
4974 Computer Ribbons [INMAC Catalog #77 page 133]	30	-	30
4973 Computer Ribbons [INMAC Catalog #77 page 133]	30	-	30
3480 Tape Rack [IBS Catalog page 69 part number 3202-3902]	1	-	1
3480 Computer Tapes [IBS Catalog page 20 part number 133133]	300	-	300
3420 Computer Tapes [INMAC Catalog #77 page 119 part number 710700]	100	-	100
3268 Computer Ribbons [INMAC Catalog #77 page 133 part number 7032821]	60	-	60
3203 Computer Ribbons [IBS Catalog page 30 part number 7037993]	60	-	60
Boxes of Computer Paper [Pryor Catalog #107807 Spring 87 page 66]	600	-	600
Screen Cleaner (case)	1	-	1

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Appendix 7

APPENDIX 7.
OFDPS BLOCK DIAGRAM

Offshore Flight Data Processing System (OFDPS)



Note: IBM 4381 and IBM Series/1 processors are configured in redundant pairs.

